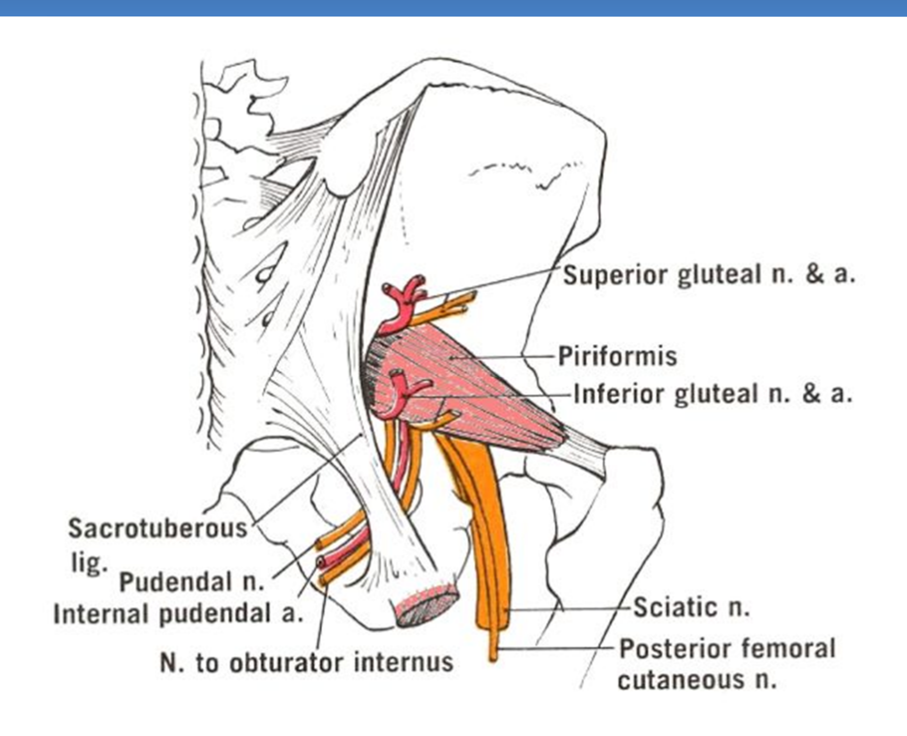
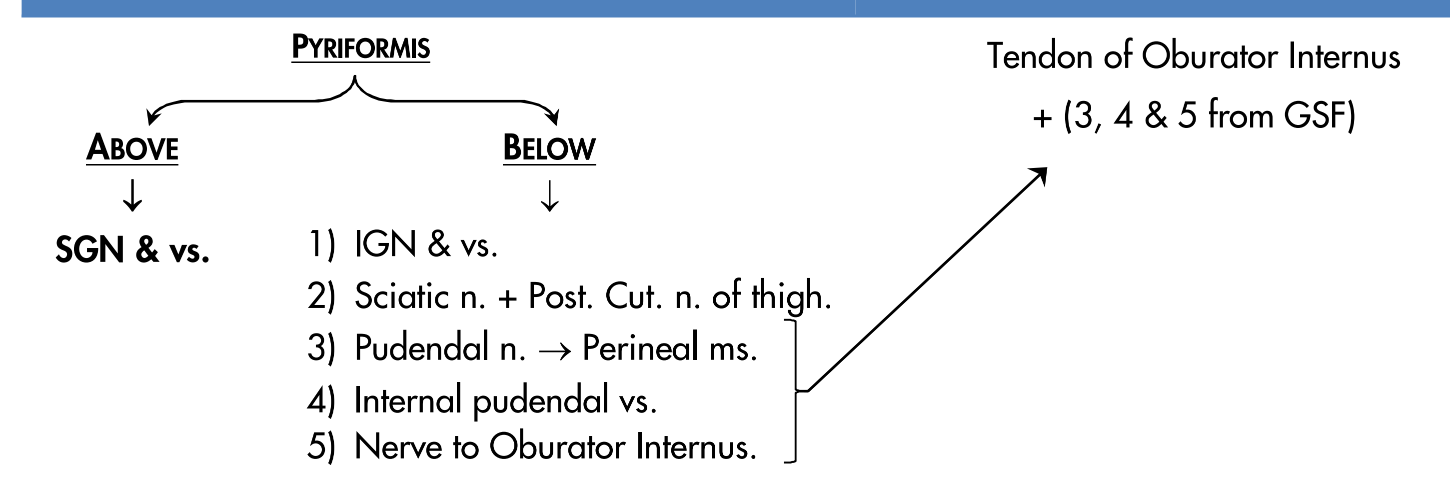
LOWER LIMB SURGICAL ANATOMY

if you find the file useful kindly share!

STRUCTURES PASSING THROUGH





GREATER SCIATIC FORAMEN

PYRIFORMIS

ABOVE
↓
SGN & vs.

BELOW
↓
1) IGN & vs.
2) Sciatic n. + Post. Cut. n. of thigh.
3) Pudendal n. → Perineal ms.
4) Internal pudendal vs.
5) Nerve to Oburator Internus.

LESSER SCIATIC FORAMEN

Tendon of Oburator Internus

+ (3, 4 & 5 from GSF)

A) Ms. of the Ant. compartment:

	Origin	Insertion	Nerve supply	Action
1) Sartorius	ASIS	**SGS$_T$** (Upper part of med. surface of tibia)	Femoral Nerve	**Cross-leg position:** 1) **Thigh** → flexion + abd. + lat. rotation. 2) **Leg** → flexion & medial rotation
2) Quadriceps Femoris 4 heads: 1) Rectus Femoris. 2) Vastus Intermedius. 3) Vastus Lateralis. 4) Vastus Medialis.		Patella, then into tibial tuberosity	Femoral Nerve	Main extensor of the knee

B) Ms. of the Gluteal Region

	Origin	Insertion	Nerve supply	Action
G. Maximus	1) Ilium 2) Sacrum 3) Sacro-tuberous ligament	1) Gluteal tuberosity. 2) Ilio-tibial tract.	IGN	Main extensor of hip
G. Medius & Minimus	Ileum	Greater trochanter	SGN	**Abduction & Support during walking** preventing waddling gait → tested by **Trendlenberg's test!**
Piriformis	Front of sacrum + greater sciatic notch	**Greater trochanter**	Sacral plexus	Ext. rotation
Quadratus Femoris	Ischial tuberosity	Inter-trochanteric crest	Sacral plexus	Ext. rotation

Ms. attached to Greater tr. : 7 = 1 + 6 (3 X2)

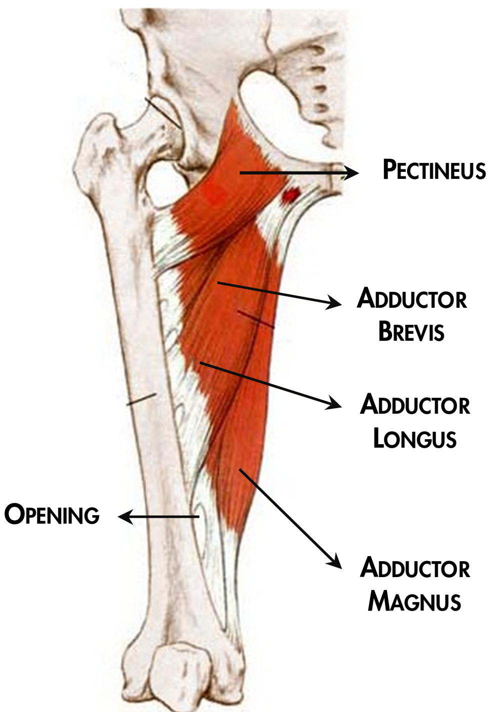
1) Pyriformis.
2) 2 = Gluteus medius & minimus.
3) 2 = Sup. & inf. Gemillus.
4) 2 = Obturator internus & externus.

"Ilio-psoas is the only ms. attached to lesser trochanter"

C) Ms. of the Medial compartment

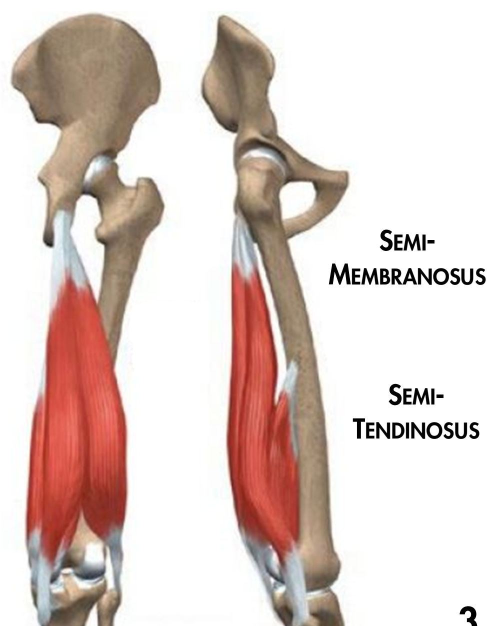
(Gracilis - Pectineus – Adductors: AL - AB - AM)

- **Origin:** Pubic bone *except Ischeal part* of AM from ischeal tuberosity. → Hamstrings / Ischial part of AM. / Quadratus femoris
- **Insertion:** Linea aspra *except Gracilis*. (SGS_i) → Medial surface of tibia
- **NS:** ON *except Pictineus* by FN & *Ischeal part of AM* by Sciatic N.
- **Action:** Adduction *except AM* is extension of hip
  - ➢ **Opening in AM bet. the pubic & ischial part** → FA continues as popliteal!



D) Ms. of the Post. compartment: "Hamstring's"

- **Origin:** Ischial tuberosity ***except Short head of Biceps f. from linea aspra***
- **Insertion:**
  - Biceps Femoris → Head of fibula
  - Semitendinosus → SGS
  - Semi-membranosus → Medial condyle of tibia
- **NS:** Sciatic nerve.
- **Action:** Main flexors of knee + Weak extensors of hip.



Femoral Artery

Superficial branches

1) Superf. Epigastric*
2) Superf. Ext. Pudendal.
3) Superf. Circumflex iliac.

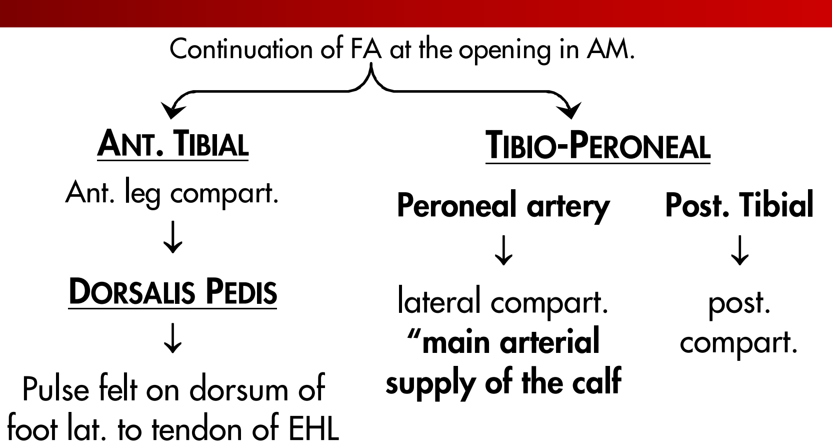
(* supplies lower abd. wall not LL only)

Deep branches

1) **Profunda femoris**
   - **Medial & lat. circumflex** femoral → to head of femur
   - **4 perforators**.
2) Deep Ext. pudendal
3) Desc. genicular

(shares in collat. circ. around the knee)

Popliteal Artery



- Best felt when the leg is ***semi-flexed.***

LNs: Superficial inguinal LNs:

- Receive from lower part of abd. Wall.
- Send efferent to Ext. iliac LNs mainly.
- Form a chain // to & 1 cm below the inguinal ligament.
- Area drained by SSV → popliteal LNs.

The only branches of EIA

- Deep circumflex iliac.
- inf. Epigastric.

Accessory Obturator artery:

- Pubic branch of inf. Epigastric → very large in 30 % of the people.
- May stick to FV → safe position.
- Or medial to lacunar ligament → dang. position → injury & massive hge during surgery!

Greater Saphenous Vein

1) Receive Superf. Epigastric & Superf. Circumflex iliac vein.
2) Ends in the **FV.**
3) **Longest** vein in the body.
4) Connected to deep veins by perforators.
5) M/C site for venesection is ANT. to Medial mallelus. (Stripping op.)

Lesser Saphenous Vein

1) Enters the leg ***behind the lat. Mallelolus.***
2) Passes ***lat. to Tendon Achilles***.
3) Ascends ***over the middle of the calf***.
4) Perforates the ***deep (crural) fascia.***
5) Ends in the **Popliteal vein.**

NERVES

LUMBAR PLEXUS

1) **FN** → ***from the dorsal divisions of $L_{2,3,4}$ passes between Psoas & iliacus & behind to the inguinal ligament***

	MOTOR	SENSORY
سميحة	SARTORIUS	• SAPHENOUS N. → to medial side of leg & dorsum of foot till the ball of the big toe. • DIVIDED INTO SUPERF. & DEEP brs. by "Lateral circumflex FA"
كرهت	QUADRICEPS	
لعبة	ILIACUS	
بوكر	PECTINEUS	

2) **ON** → Obturator externus + All medial compartment except Ischeal part of AM
3) **Lumbo-sacral branch (to the sacral plexus)**
4) **Ilio-hypo-gastric & ilio-inguinal.**
5) **lateral cutaneous nerve of thigh.**
6) **Genito-femoral**

SACRAL PLEXUS

1) **SCIATIC** → Hamstrings + Ischial part of AM (see below)
2) **PUDENDAL**
3) **POST. CUTANEOUS NERVE OF THIGH**
4) **SGN** → Gluteus medius & minimus + T. FASCIA LATA
5) **IGN** → Gluteus Maximus

(2–5: *Pass through the GSF*)

6) N. to pyriformis – Quadratus femoris – Obturator internus.

MISCELLANEOUS:

1) **COXA VARA** → ↓ neck-shaft angle of femur.
2) **HOUSE-MAID'S KNEE** → Pre-patellar bursa.
3) **TALIPES- EQUINOVARUS** → plantar flexion + adduction + inversion.

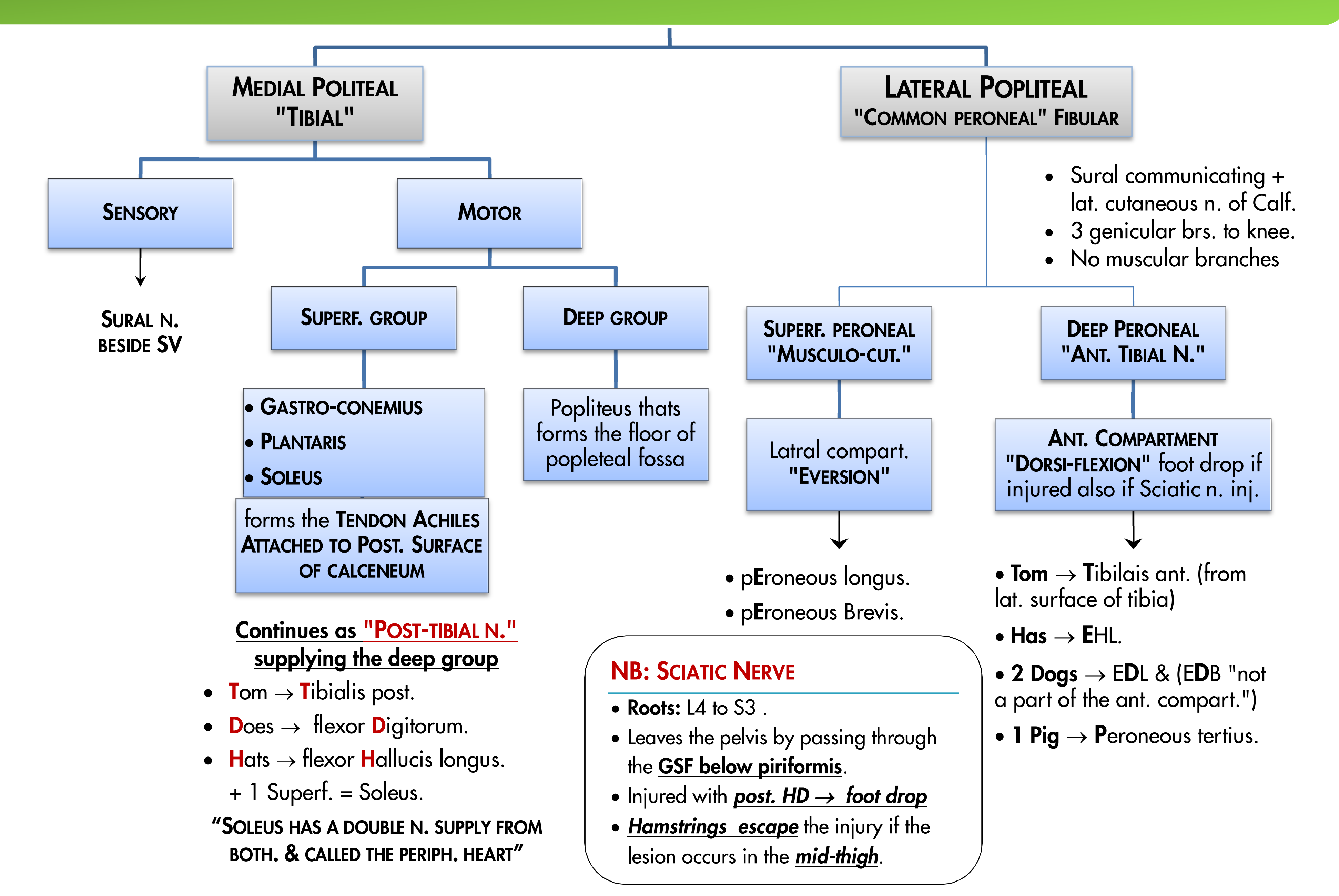
BRYANT'S TRIANGLE:

1) A line from ASIS perpendicular to bed.
2) Another line from the greater trochanter perp. To the 1st
3) Compare to the other site.
4) it's narrower in trochanteric displacement

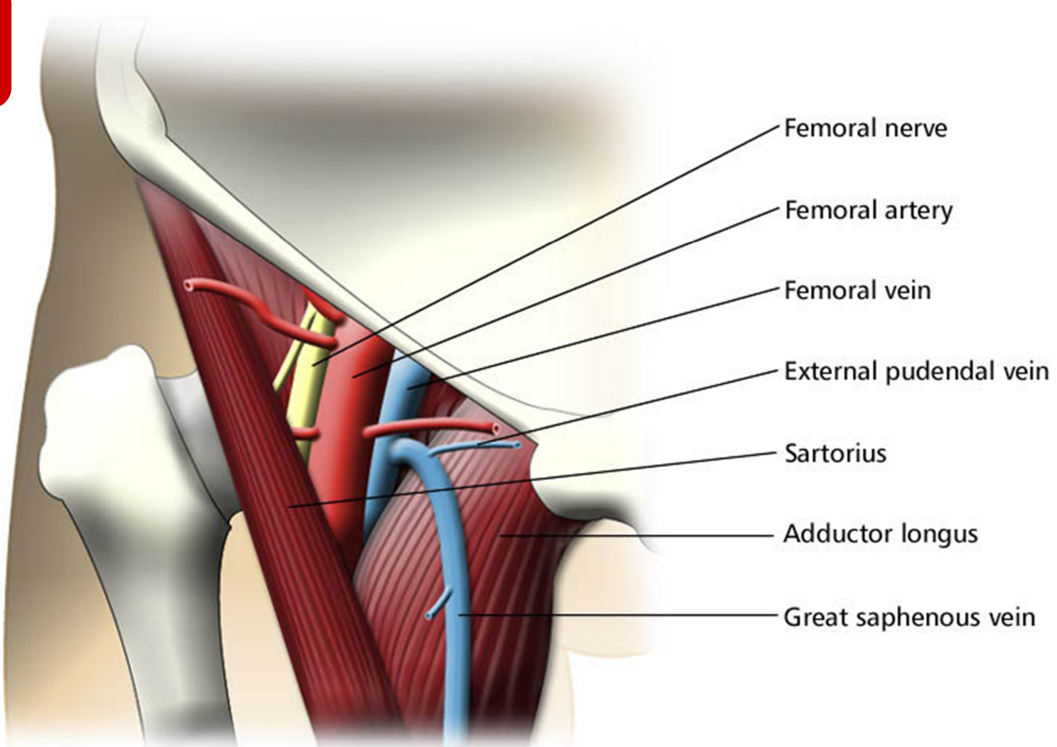
NELATON'S LINE:

- From ischial tuberosity to ASIS.
- Touching the tip of the greater trochanter.
- But in true supra-trochanteric shortening → the head is shifted upwards & the greater trochanter lies above the line.

Sciatic Nerve



Femoral Triangle



a) **SITE:**. Upper 1/3 of front of thigh.

b) **BOUNDARIES:**

- **Lateral:** Medial border of Sartorius.
- **Medially:** Medial border AL.
- **Base:** Inguinal lig. (Pouparts's)
- **Apex:** Sartorius overlapping AL.

c) **FLOOR (FROM MEDIAL TO LATERAL):**

- A = Adductor Longus.
- P = Pectineus.
- P = Psoas major.
- I = Iliacus.

d) **ROOF:** Skin, Superf. Fascia, deep fascia
→ containing the saphenous opening.

f) **CONTENT: FROM LATERAL TO MEDIAL**

FEMORAL NERVE & OTHERS	FEMORAL SHEATH (FROM LAT. NEDIAL)	
	FA →	FV → FEMORAL CANAL
1. Saphenous N. (from FN) 2. lat. cutaneous n. of thigh (from lumbar plexus)	*"& femoral br. of genitor- femoral n (in front of FA)"* *FA bisects the triangle vertically.*	**Allows expansion of FV during ex.** • **SITE OF FEMORAL HERNIA** ± Enlarges to relive strangulation ± serious he dt rupture of Accessory Obturator a. • **CONTAINS**: fat, lymphatics + LN OF CLOQUET • **FEMORAL RING FORMS ITS BASE! BOUNDARIES:** ✓ **Ant:** Inguinal lig. (Poupart's lig.) ✓ **Post:** Pectineal lig. (Cooper's lig.) ✓ **Lat.:** FV. (separated from the femoral canal by the lacunar part of ing. Lig) ✓ **Med.:** Lacunar ligament.

NB: AT THE APEX, STRUCTURES ARE ARRANGED AS FOLLOWS (FROM ANT. TO POST.):

- FA
- FV
- Profunda femoris Vein.
- Profunda femoris Artery
ie: arteries enclose the veins

ADDUCTOR CANAL

(SUB-SARTORIAL OR HUNTER'S CANAL

1) **SITE:** middle 1/3 of medial side of the ant. Surface of thigh

2) **BOUNDARIES:**

- **AM wall**: Sartorius.
- **AL wall**: Vastus Medialis.
- **Floor**: AM + AL.

3) **CONTENTS: IT'S CONSIDERED AS A CONTINUATION TO THE FEMORAL CANAL**

- FA & FV + it's Descending genicular branch (to knee)
- Saphenous nerve. (not the FN!) ***crosses the vs. from lat. to medial.***
- N. to vastus medialis.

POPLITEAL FOSSA

1) **SITE:** diamond shaped space at the back of knee

2) **BOUNDARIES:**

- **Antero-lat.:** Biceps femoris.
- **Antero-medial:** 2 Semis. (Semi-tendinosus & membranosus)
- **Below:** 2 heads of Gastrocnemeus.

3) **FLOOR:** -

- **Above**: popliteal surface of femur.
- **Middle**: Joint capsule..
- **Below**: fascia covering popliteus

4) **ROOF:** skin & superf. Fascia (containing short saphenous vein) & deep fascia

5) **CONTENTS:**

- **FROM DEEP TO SUPERF.(POPLITEAL AVN)**
  - ✓ Middle of fossa → Medial popliteal n.
  - ✓ Lat. part of fossa → Lat. popliteal n.
- **MEDIALLY** → LNs + semimembranosus bursa!

